



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

Date **September 8, 1992**

From **Arthur Block** *A. Jones for*
Sr. Regional Representative

Subject **Site Review and Update (SRU) for Ventron/Velsicol Site, Wood-
Ridge Boro, Bergen County, NJ**

To **Richard Puvogel**
ERRD/NJS-II

The attached Site Review and Update (SRU) document dated **August 27, 1992** for the above site was prepared by the New Jersey Department of Health (NJDOH) under a cooperative agreement with the ATSDR.

Please review the document for any addition information needed or major technical, factual errors. This SRU provides the EPA an opportunity to review and comment. Your review and comments are important and should be approved or at least acknowledged by appropriate management.

Please submit your comments back to this office within **20 days** of date of this memorandum, **September 24, 1992**. Should you have any questions or concerns, please contact me at extensions 9673/9255.

Attachment

CC:

G. Buynoski
B. Williams
G. Ulirsch
R. Gillig
M. Howie

K. Callahan
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D. Santella/attach.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
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AUG 14 2001

Gwen Zervas

New Jersey Department of Environmental Protection

Bureau of Federal Case Management

401 East State Street

P.O. Box 028

Trenton, New Jersey 08625-0028

Re: Comments on Draft Operable Unit 1 Human Health Risk Assessment: Ventron/Velsicol Site, April 2001

Dear Ms. Zervas:

EPA has reviewed the above referenced document. Overall, the document will require significant revisions to ensure that potential risks to public health are appropriately evaluated.

General Comments:

1. The baseline human health risk assessment (BHHRA) does not adequately address groundwater at the site. The groundwater is designated by the state as a potable water supply, and it must be evaluated as such in the BHHRA. If it is not currently used as a potable water supply, then the BHHRA can focus on exposure under future use scenarios. Also, the evaluation of groundwater as a potable water supply should include residential use of groundwater. The NCP states in Section 300.430 (a) (1) (iii) (F) that "EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a time frame that is reasonable given the particular circumstances of the site." Therefore, if the aquifer is designated as potable, then it must be evaluated for its most beneficial use, which would include residential exposure scenarios. The practicability of the restoration of the aquifer is addressed in the feasibility study, not the BHHRA or the remedial investigation.
2. The Remedial Investigation (RI) report indicated that air samples have been collected. These samples should be discussed, included, and evaluated in the BHHRA. Based on the type of contamination detected in the surface soil and subsurface soil and groundwater at the site, exposure to both indoor air and outdoor air is of concern and should be evaluated in the BHHRA.
3. Although some of the RAGS Part D tables have been completed, some of the tables have not. To be consistent with current EPA Superfund guidance, the document should contain all RAGS Part D tables in the standard format. EPA will not review the tables until all RAGS Part D tables are completed.
4. The BHHRA assumes that all mercury detected at the site is inorganic. However, the RI report includes mercury samples that were speciated as organic (methyl) mercury and

total mercury. These data must be included in the risk assessment. For example, the BHHRA should include a map which indicates what samples were speciated for mercury. If the sampling for various forms of mercury is representative of a certain exposure area and exposure medium (i.e., surface soils), then the ratio of organic to total mercury may be suggested for that medium for the entire exposure area. The BHHRA is incomplete in its presentation and interpretation of the mercury sampling conducted for the RI.

5. Inhalation of contaminants in outdoor air was included in the BHHRA. The methods used for the air sampling must be included or referenced to the RI report. For example, were air samples collected over a period of several hours? Do the data represent hourly averages or composite results? Was the soil dry? When was the most recent rain event? Were the air samples collected from an area near unpaved or covered soils? Under future use scenarios, is it likely that trucks/construction vehicles driving over the soils could generate additional dust? Was this scenario evaluated using appropriate dust generation models? If not, what was the rationale for excluding this potential exposure scenario?
6. NJDEP borehole data for PCBs in on-site soils should be included in the risk assessment.
7. The BHHRA does not adequately address potential risks associated with consumption of fish. The BHHRA states that the waters clearly included within OU1 (the on-site basin and the West Ditch) were determined to be unable to support fish or other aquatic organisms that would be consumed by humans. However, sampling of aquatic biota was not conducted and no other evidence is provided to support this determination. The BHHRA should provide a justification for the determination, addressing current conditions and future uses. This should include information on the state use designations for the water bodies. In addition, despite the potential that contamination from OU1 continues to impact nearby surface waters, including Berry's Creek, the waters adjacent to OU1 were not considered in the BHHRA. The BHHRA should identify and discuss this issue, including the potential impacts of OU1 on nearby waters, whether the waters support organisms that humans may consume, and the designated uses. Also note that Figure 2-1 indicates that the BHHRA addresses surface water from the Diamond Shamrock/Henkel Ditch (North), which is not consistent with the text. Please clarify whether this water body was addressed in the BHHRA.

Specific Comments:

1. Page ES-2, Bullets 2 and 6: The text should clarify the differences between inhalation of COPCs in surface soil (assuming inhalation of fugitive dust) identified in Bullet 2 and the inhalation of outdoor air in Bullet 6.
2. Page ES-2, Bullet 4: Since groundwater is designated by the State as a potable water supply, the baseline human health risk assessment (BHHRA) must consider residential use of drinking water as a future use scenario. Please see General Comment 1 for further information.

3. Page ES-2: Vapor intrusion from the subsurface to indoor air must be considered in the BHHRA. Please see General Comment 2 for further information.
4. Page ES-3, Paragraph 1: The text states that the estimated risks may be overestimated based on some of the assumptions incorporated into the BHHRA, and cites the use of groundwater as a drinking water source as an example. However, based on the State designation of the aquifer as a potable water supply, consideration of the ARAR is required for future use scenarios. The text should be revised to clarify any potential overestimation of risks and hazards associated with this pathway.
5. Page ES-3, Toxicity Assessment: If toxicity data are not available on IRIS, then HEAST and NCEA should also be consulted. Please revise the text to include the other appropriate sources for toxicity data.
6. Page ES-6: The last two sentences are completely subjective, and are inconsistent with the intent of the BHHRA. This text must be removed.
7. Page 1-2, Section 1.1 Site Description: This section should be revised to include a description of groundwater at the site. For example, the description should include the State use designation of the aquifers, the depth to the water table, the direction of groundwater flow, and the point of discharge to a surface water body, as well as the State use designation for the receiving body.
8. Page 1-3, Paragraph 2: The text describing the residential area should be revised to indicate how many residential properties are located in the area 750 feet north of the site, and how many people reside in this area. Also, where is the nearest property which is zoned for residential use? This information is necessary when evaluating the likelihood and frequency of trespassers at the site.
9. Page 1-4, Section 1.2, Bullet 1: The New Jersey soil cleanup criteria have not been promulgated and are not standards. The text should be revised to correctly describe the regulatory authority associated with the criteria.
10. Page 1-5, Bullet 1: Please note that *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance "Standard Default Exposure Factors"* Interim Final (OSWER Directive # 9285.6-03) March 1991 will be used as the primary source for exposure factors.
11. Chapter 2: This chapter is numbered beginning with Page 2-7. Is this a typographical error or are pages missing from this chapter?
12. Page 2-8, Paragraph 3: This paragraph discusses the potential for chemicals to volatilize from soil or shallow groundwater to air. Does this discussion include indoor air? If so, the presence of soil coverage, such as pavement, is not an issue, and its relevance to this pathway should be clearly defined as limited to volatilization to outdoor air. If the

discussion does not include indoor air, the text should be revised to address this pathway.

13. Page 2-9, Section 2.2.1.1: Due to the presence of contamination in the subsurface soil and groundwater, this section should include the vapor migration to indoor air pathway.
14. Chapter 3: This chapter is numbered beginning with Page 3-11. Is this a typographical error or are pages missing from this chapter?
15. Page 3-11, Paragraph 2: EPA agrees with the approach that the material from the drums and test pits are not included in the evaluation of soil in the BHHRA. However, should these materials be evaluated as distinct media? The test pits can be included in the BHHRA as areas of concern, or “hot spots”, with separate pathways, exposures, and estimated risks and hazards. Why was this approach not included in the BHHRA?
16. Page 3-12, Paragraph 2: The third sentence should be revised to state that maximum detected concentrations were used to screen for COPCs.
17. Page 3-13, Paragraph 2: The last sentence should be revised to clearly state the basis for the assumption that the total exposure to soils/sediments would be “at least an order of magnitude less than” residential soil exposure. What exposure parameters are considered in this comparison? For example, the exposure frequency for residential scenarios is 350 days per year. Are the exposure frequencies expected for the soils/sediments less than 35 days per year? If so, this should be included in the text.
18. Page 3-13, Paragraph 3: The state use designation for the surface water bodies (the onsite basin and the West Ditch) should be included in the text.
19. Page 3-15, Surface soil and sediment in undeveloped area: Calcium, magnesium, potassium, and sodium are listed as chemicals of potential concern (COPCs). However, on Page 3-14, the second bullet indicates that these chemicals are not retained as COPCs, which is consistent with Region 2 policy. Why were these chemicals identified as COPCs?
20. Page 3-16, Subsurface soils in undeveloped area: What screening concentration was used for phenanthrene? Currently, there are no Region 3 or Region 9 risk-based values for this chemical.
21. Page 3-17, Section 3.1.2 Groundwater: Please clarify what is meant by the term “chemicals classes” when identifying COPCs. Typically, COPCs are identified based on properties associated with an individual chemical, rather than a chemical class.
22. Page 4-1, Paragraph 4: The last sentence should be removed. The inclusion of groundwater use in the BHHRA is consistent with both the intent of the NCP and the state use designation.

23. Page 4-3, Bullet 2: Intakes estimated from inhalation of COPCs should be clarified as either fugitive dust/particulates or vapors.
24. Page 4-4, Bullet 1: Groundwater should be evaluated under a residential exposure scenario. Please see Specific Comment 1 for further information.
25. Page 4-4, Section 4.3: Indoor air must be evaluated in the BHHRA, based on the presence of contamination in the subsurface soil and groundwater.
26. Page 4-5, Paragraph 2: What is the reference for the exposure frequencies (EFs) of 25 days per year and 10 days per year for the RME and CTE scenarios for the construction worker. These EF are representative of one month and two weeks, respectively. Are most construction activities conducted in this time frame? Likely EF values for this scenario are six months for the RME and 3 months for the CTE.
27. Page 4-5, Paragraph 3: Trespassing at the facility is considered unlikely due to "...surrounding industrial development, and cold winter and fall weather." However, residential properties are located approximately 750 feet from the site, and warmer weather can occur in spring, summer, and the early part of the fall. Therefore, based on the proximity of residential properties and climatological factors including cold winter weather, a scenario of 5 days per week during the 13 summer weeks, and 3 days per week during the 26 spring and fall weeks, an exposure frequency of 132 days per year is suggested as a realistic scenario.
28. Page 4-7, Section 4.3.3, Paragraphs 2 and 3: Skin surface area (SSA) is an exposure parameter which is linked to body weight. Therefore, the values for SSA should not change from the RME to the CTE unless the body weight changes for these scenarios. EPA recommends using the same values for both SSA and body weight under the RME and CTE scenarios. The SSA recommended for adult is 5700 cm² and for adult workers is 2800 cm². The SSA for the older child should be 400 cm² for both the RME and the CTE scenarios. The reference for these values is the draft dermal guidance and Region 2.
29. Page 4-8, Paragraph 2: The draft dermal guidance recommends using 0.2 mg/cm² for the soil-to-skin adherence factor (SSAF) for the adult worker under the RME scenario, and 0.02 mg/cm² for the SSAF for the adult worker under the CTE scenario. For construction workers, the draft dermal guidance recommends using 0.2 mg/cm² for the RME and 0.1 mg/cm² for the CTE.
30. Page 4-9, Section 4.3.5, Paragraph 1: As stated in Specific Comment 28, SSA is linked to body weight and should not change from the RME to the CTE unless the body weight changes for these scenarios. EPA recommends using the same values for both SSA and body weight under the RME and CTE scenarios. The SSA recommended for adults is 5700 cm² and for adult workers is 2800 cm². The SSA for the older child should be 400 cm² for both the RME and the CTE scenarios. The reference for these values is the draft dermal guidance and Region 2.

31. Page 4-10, Section 4.3.6: This section must be revised to address residential use of groundwater which is designated potable by the State. Please see General Comment 1 for additional information.
32. Page 4-10, Section 4.3.7: The text states that mercury was the only contaminant identified in air. What is the basis for this? Other chemicals were detected in the surface soils; why was mercury the only chemical identified in air? The text refers to Table 4-10 for an “algorithm” used to estimate mercury vapor in outdoor air. However, Table 4-10 is the RAGS Part D table for exposure assumptions used to estimate an intake, not an outdoor air concentration. Table 4-10 references Appendix A as the source for the modeling of outdoor air concentrations. Table A-6, states, which is labeled “Outdoor Air” includes both indoor air and outdoor, and includes only mercury. Why were other contaminants not included?
33. Page 4-11, Section 4.3.8: The text in the first paragraph is incorrect. The difference between the RME and the CTE scenarios is the evaluation to quantify how a person/population is exposed, not the concentration to which the person/population is exposed. For example, the RME scenario typically uses high-end values such as the 90th or 95th percentile values for exposure parameters which represent the contact rate. The CTE scenario incorporates average values to represent the contact rate. However, in both scenarios, the exposure point concentration (EPC) is the same - either the maximum detected concentration or the 95% UCL on the arithmetic mean.
34. Page 4-11, Section 4.3.8, Paragraph 3: The text states that the Kolmogorov-Smirnov goodness-of-fit test was used to test for lognormality or normality. However, EPA guidance (“Supplemental Guidance to RAGS: Calculating the Concentration Term” Publication 9285.7-081), recommends the Shapiro-Wilk test. Why was the K-S test used, rather than the W test? What are the differences between these two tests?
35. Page 4-12, Equation: The term “ S_y^2 ” should be defined as the variance of the mean.
36. Page 5-1, Paragraph 1: The text states that inorganic mercury was identified as a COPC. However, based on the fact that mercury was speciated in certain media in the RI, this is incomplete. The text should be revised to state what form of mercury was analyzed in which media, and how this affects the ratio of organic mercury to total mercury.
37. Page 5-1, Paragraph 2: The text should indicate that both HEAST and NCEA are sources of toxicity data.
38. Page 6-2, Section 6.1.2: The text states that chemicals that account for 90% of the risk for each pathway are included in Tables 6-1 and 6-2. What is the basis for identifying those chemicals which contribute 90%?
39. Page 6-3: The word “cumulative” is italicized consistently throughout Chapter 6. What is

the reason for this?

40. Page 6-6, Bullet 1: As previously stated, use of groundwater and likelihood of trespassing are both appropriate exposure scenarios. As quantified in the BHHRA, the risk and hazards associated with trespassing are potentially underestimated. The text in this bullet should be revised to accurately reflect the uncertainties of the BHHRA.
41. Page 6-6, Bullet 3: The text states that the "[s]ite-related risks may have been overestimated if these metals were also present in background media at similar concentrations." This is wrong. By definition, site-related risks are related to the site, and are independent of concentrations associated with background. According to the text, the contaminants contributing to the site-related risks may also be present in the background media at similar concentrations. However, this does not mean that the site-related risks and the background risks should not be considered during risk management activities. If the site-related risks exceed acceptable levels, then risk management activities should take this into account. The text should be revised to clearly state the differences between risks associated with site-related contaminants and risks associated with background concentrations.
42. Page 6-6, Section 6.2.4: The text should discuss the results of the mercury samples that were speciated, and also how this impacts the hazards estimated for the site.
43. Page 6-7, Paragraph 2: The text identifies the magnitude of the uncertainty factor of the RfD as a potential factor in evaluated the hazard quotient and hazard index. This assumption is based on a personal communication from 1989, which is 12 years ago. Are more recent references available for this interpretation of the uncertainty factor?
44. Page 6-8, Paragraph 1: This text should be removed. The assumption that all mercury detected at the site is inorganic is not appropriate, and is not protective of public health.
45. Page 7-2, Paragraph 1: It is inappropriate to include this text in the BHHRA. Potential future uses involving engineering/institutional controls, such as introducing clean fill prior to development, cannot be included in the BHHRA, and should be discussed in the FS.
46. Figure 2-1: Vapor intrusion to indoor air from the subsurface should be included in the conceptual site model.
47. Table 4 Series: The tables which deal with exposure factors must be updated based on revisions to exposure frequencies, SSAFs, and other parameters.
48. Tables 4-2, 4-3, 4-4, and 4-5 : The default dermal absorption factor (DAF) of 0.1 for organics is incorrect. The draft dermal guidance states that the default DAF of 0.1 is appropriate for screening for semi-volatiles only. Therefore, it is inappropriate to use a DAF of 0.1 to estimate dermally absorbed doses for all organic chemicals. It is most

appropriate to address chemicals for which chemical-specific DAFs are not available in a qualitative manner.

49. Table 4-6:

- A. What is the reference for the Oral to Dermal Adjustment Factor for aluminum, copper, iron, zinc, and chloroethane?
- B. The Oral to Dermal Adjustment Factor for cadmium is 0.025 for dietary exposures (i.e., soil and sediment) and 0.05 for exposures to water, including surface water.
- C. The Oral to Dermal Adjustment Factor for chromium (as Chromium VI) is 0.025.
- D. The Oral to Dermal Adjustment Factor for mercury is 0.74 - 0.80 for metallic mercury and 0.95 for methylmercury. Without data to identify the specific form of mercury present at the site, the most conservative adjustment factor should be used.
- E. The reference for the Dermal Permeability Constants is the *Dermal Exposure Assessment: Principles and Applications* (EPA/600/8-91/011B). The following values should be revised:

Chemical	Dermal Permeability Constant (cm/hour)
Nickel	0.0001
Benzene	0.021
DEHP	0.033
Chloroethane	0.008
Chlorobenzene	0.041
1,4-Dichlorobenzene	0.062
1,2-Dichloroethene (isomers)	0.0013
Toluene	0.045
Xylene isomers (total)	0.08
Benz[a]anthracene	0.081
Benzo[a]pyrene	1.2
Benzo[b]fluoranthene	1.2
Dibenz[a,h]anthracene	2.7
Indeno[1,2,3-cd]pyrene	1.9
Naphthalene	0.069

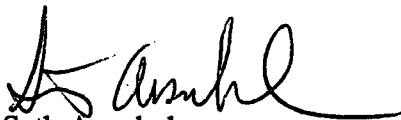
- F. What is the reference for the Dermal Permeability Constants for the following chemicals: acetone, carbazole, 4-methyl-2-pentanone, 4-methylphenol, and 2-

methylnaphthalene?

50. Table 4-10: The equation is incorrect. The units do not work and the exposure parameters do not make sense. Also, the parameter definitions and units are incorrect. The inhalation rate is expressed in terms of L/day, rather than in m^3/day or m^3/hour .
51. Tables 5-1 and 5-2: These tables are incomplete. Inhalation toxicity data are not provided, although inhalation of outdoor and indoor air are exposure routes of concern. Also, these tables are not submitted in the appropriate RAGS Part D format and must be revised. The toxicity data will be reviewed by EPA's NCEA office, and comments submitted when the review is complete.
52. Table 6 Series: These tables have not been submitted in the appropriate RAGS Part D format and will not be reviewed.
53. Appendices A and C will not be reviewed until the information is submitted in the appropriate RAGS Part D format.

Please contact me at (212) 637-4976 if you have any questions regarding these comments.

Sincerely,



Seth Ausubel
Remedial Project Manager
New Jersey Remediation Branch